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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/672,512	09/28/2000	Richard Thomas Aiken	5-11	2116

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EXAMINER	
NGUYEN, DAVID Q	
ART UNIT	**PAPER NUMBER**
2681	

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/672,512	RICHARD THOMAS AIKEN ET AL	
	Examiner	Art Unit	
	David Q Nguyen	2681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5,6-7,9-14,15-16,18-20, 22-24 and 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forssen et al (US 5615409) in view of Fukagawa et al. (US 6188913 B1).

Regarding claims 1,10 and 18, Forssen et al discloses a system, a transmitter and method for generating a composite electromagnetic (EM) field to carry a signal to at least two terminals by directing energy in a plurality of directions (see fig. 2a and 2b), the amount of energy directed in the direction of each of the terminals being a function of the locations and acceptable receive strengths of at least two of the terminals (see fig. 2a-2b and fig. 2-5; col. 4, lines 36-67). Forssen et al. does not disclose wherein the direction is an azimuth direction. However, Fukagawa et al. discloses the direction is an azimuth direction (see col. 22, lines 25-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the

above teaching of Fukagawa et al. to Forssen et al in order to apply to a monopole antenna which does not produce significant radiation in the elevation direction.

Regarding claims 2, 11 and 19, the transmitter, system and method of Forssen et al in view of Fukagawa et al. also discloses wherein the function is such that a strength of the EM field at the location of any of the at least two terminals is at least as large as, but not significantly larger than, needed for that terminal to receive the signal carried by the EM field with an acceptable level of signal quality (see fig. 2a-2b and fig. 3-5; col. 4, lines 36-67 of Forssen et al).

Regarding claims 3, 12 and 20, the transmitter, system and method of Forssen et al in view of Fukagawa et al. also comprises the step of: determine for each on of the terminals an EM field that would have to be generated for the one terminal in order to provide an acceptable receive strength thereat, the determining taking into account the strength, at the location of the one terminal, of EM fields previously determined for others of the terminals (see fig. 2a-2b and fig. 3-5; col. 4, lines 36-67 of Forssen et al); repeat the first determining until the EM fields determined for the at least two of the terminals provide an EM field strength for each of the at least two of the terminals that is substantially equal to its adequate receive strength (see fig. 2a-2b and fig. 3-5; col. 4, lines 36-67 of Forssen et al); determine the amount of energy to be directed in the direction of each of the terminals based on the EM fields thus determined (see fig. 2a-2b and fig. 3-5; col. 4, lines 36-67 of Forssen et al).

Regarding claims 4, 13 and 23, the transmitter, system and method of Forssen et al in view of Fukagawa et al. also includes: each EM field being represented by on of a plurality of beam patterns (see fig. 2a-2b and fig. 3-5; col. 4, lines 36-67 and col. 2, lines 20-41 of Forssen et al); the first determining comprises determining for each one of the terminals a beam pattern that

would have to be generated for the one terminal in order to provide an acceptable receive signal strength thereat, the determining taking into account the EM field strength, at the location of the one terminal, of beam-patterns previously determined for others of the terminals (see fig. 2a-2b and fig. 3-5; col. 4, lines 36-67 and col. 2, lines 20-41 of Forssen et al); and the repeating comprises repeating the first determining until the beam-patterns determined for the at least two of the terminals provide an EM field strength for each of the at least two of the terminals that is substantially equal to its adequate receive signal strength (see fig. 2a-2b and fig. 3-5; col. 4, lines 36-67 and col. 2, lines 20-41 of Forssen et al).

Regarding claims 6,15 and 25, the transmitter, system and method of Forssen et al in view of Fukagawa et al. also discloses wherein one of a plurality of weight vectors corresponds to each of the beam-patterns (see fig. 2a-2b and fig. 3-5; col. 4, lines 36-67; col. 3, line 53 to col. 4, line 67 and col. 2, lines 20-41 of Forssen et al), and the second determining step comprises the steps of determining a composite weight vector using the plurality of weight vectors, and a null-filling factor (see fig. 2a-2b and fig. 4; col. 3, line 53 to col. 4, line 67 and col. 2, lines 20-41 of Forssen et al);

determining a composite beam-pattern using the composite weight vector, the composite beam-pattern representing the composite EM field (see fig. 2a-2b and fig. 4; col. 3, line 53 to col. 4, line 67 and col. 2, lines 20-41 of Forssen et al); and

determining the amount of energy to be directed in the direction of each of the terminals based on the composite EM field (see fig. 2a-2b and fig. 4; col. 3, line 53 to col. 4, line 67 and col. 2, lines 20-41 of Forssen et al).

Regarding claims 7, 16 and 26, the transmitter, system and method of Forssen et al in view of Fukagawa et al. also discloses a processor operable to:

determining for each one of the terminals an EM field that would have to be generated for the one terminal in order to provide an acceptable receive strength thereat if that one terminal was the only terminal that needed to receive the signal (see fig. 2a-2b and fig. 4; col. 3, line 53 to col. 4, line 67 and col. 2, lines 20-41 of Forssen et al); determine a scaling factor for each EM field such that each EM field, associated with the at least two terminals, scaled by its scaling factor provides an EM field strength at the location of each of these at least two terminals that is substantially equal to its adequate receive strength (see fig. 2a-2b and fig. 4; col. 3, line 53 to col. 4, line 67 and col. 2, lines 20-41 of Forssen et al); scale each EM field, associated with the at least two terminals, by its scaling factor (see fig. 2a-2b and fig. 4; col. 3, line 53 to col. 4, line 67 and col. 2, lines 20-41 of Forssen et al); and determine the amount of energy to be directed in the direction of each of the terminals based on the EM fields thus determined (see fig. 2a-2b and fig. 4; col. 3, line 53 to col. 4, line 67 and col. 2, lines 20-41 of Forssen et al).

Regarding claims 9, 27 and 28, the transmitter, system and method of Forssen et al in view of Fukagawa et al. also discloses transmitting the signal/energy to the terminals via a phased array antenna (see fig. 1, 2a-2b and fig. 4; col. 3, line 1 to col. 4, line 67 and col. 2, lines 20-41 of Forssen et al).

Regarding claims 22 and 29-30, the system of Forssen et al in view of Fukagawa et al. also discloses the system is a wireless communication system comprising a base station and terminals being mobile terminals (see abstract and fig. 2a-2b of Forssen et al).

Regarding claims 5, 14 and 24, the transmitter, system and method of Forssen et al in view of Fukagawa et al. does not mention the beam-patterns being voltage beam patterns; the acceptable receive strength being an acceptable received voltage; and the adequate receive strength being an adequate receive voltage. Examiner takes official notice that it would have been obvious to one of ordinary skill in the art at the time of the invention that signal strengths calculated and converted from voltage of signals are well known in the art. As explained above, Frossen et al clearly disclose the beam-patterns being voltage beam patterns; the acceptable receive strength being an acceptable received voltage; and the adequate receive strength being an adequate receive voltage.

3. Claims 8, 17 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forssen et al (US 5615409) in view of Fukagawa et al. (US 6188913 B1) and further in view of Matsuda et al (US 5200755).

Regarding claims 8, 17 and 31, the transmitter, system and method of Forssen et al in view of Fukagawa et al. does not disclose the direction is an azimuth direction. However, Matsuda et al disclose the direction is an azimuth direction (see col. 7, lines 1-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the above teaching of Matsuda et al to the transmitter, system and method of Forssen et al in view of Fukagawa et al. in order to form the antenna in the direction of each of the terminals automatically and accurately.

4. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forssen et al (US 5615409) in view of Fukagawa et al. (US 6188913 B1) and further in view of Wong et al, (U.S. 6,330,460).

Regarding claim 21, the transmitter, system and method of Forssen et al in view of Fukagawa et al. does not mention the processor is located in the transmitter. However, in Wong as modified above, the processor is located in the transmitter. See Wong, Fig. 2. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the above teaching of Wong to the transmitter, system and method of Forssen et al in view of Fukagawa et al. in order to form the antenna in the direction of each of the terminals automatically and accurately.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Q Nguyen whose telephone number is 703-605-4254. The examiner can normally be reached on 8:30AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 703-308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DN
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